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ON SUPERCYCLICITY FOR ABELIAN SEMIGROUPS OF MATRICES ON $\mathbb{R}^n$

SALAH HERZI AND HABIB MARZOUGUI

Abstract. We give a complete characterization of supercylicity for abelian semigroups of matrices on $\mathbb{R}^n$, $n \geqslant 1$. We solve the problem of determining the minimal number of matrices over $\mathbb{R}$ which form a supercyclic abelian semigroup on $\mathbb{R}^n$. In particular, we show that no abelian semigroup generated by $\left[\frac{n-1}{2}\right]$ matrices on $\mathbb{R}^n$ can be supercyclic. ($[\,]$ denotes the integer part). This answers a question raised by the second author in [H. Marzougui, Monatsh. Math. 175 (2014), 401–410]. Furthemore, we show that supercyclicity and $\mathbb{R}_+$-supercyclicity are equivalent.

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